

INTERNAL DELIBERATIVE – DO NOT DISTRIBUTE

2015 Ozone NAAQS Designations: Wisconsin Areas (excluding Milwaukee)**Briefing for Bill Wehrum**

April 3, 2018

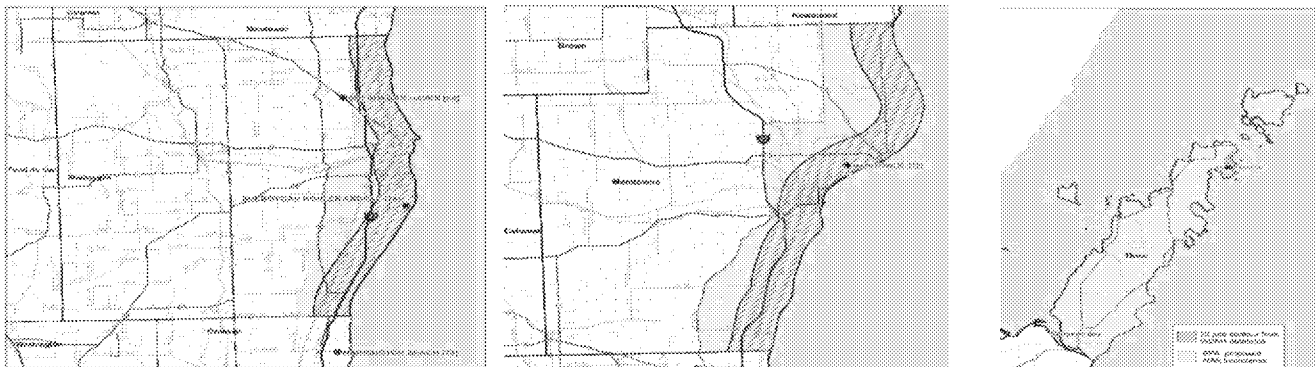
Wisconsin Shoreline Counties (Sheboygan, Manitowoc, and Door Counties)

EPA's intended nonattainment boundaries for individual areas of Sheboygan County and Manitowoc County (partial counties) were delineated by roadways, and by the Sturgeon Bay Canal for Door County (partial county). Note that Door County qualifies as a Rural Transport Area, but the other areas do not.

Potential Options for Final Wisconsin Shoreline Counties Area Designations

1. EPA proposed partial counties.
2. "Distance from shoreline" approach encompassing land where the state estimates ozone is above 70 ppb in Sheboygan and Manitowoc counties. State park boundary for Door County.
3. State's recommended designation of Attainment for each area.

Figure 1. *Overlay of EPA and State-recommended boundaries for Sheboygan County (Left), Manitowoc County (Center), and Door County (Right).*

State Recommendation

If EPA does not designate the whole area as attainment, WDNR urges EPA to minimize the extent of the nonattainment area to those areas that are violating the NAAQS (above 70 ppb)—WDNR emphasizes this should not be construed as a nonattainment recommendation (see **Figure 1**).

- Sheboygan County: No greater than 2.3 miles inland or 2.9-mile alternative.
- Manitowoc County: No greater than 2.9 miles inland.
- Door County: No greater than the boundaries of Newport State Park.

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EPA Program Staff Overview/Analysis**Sheboygan County (partial)****Background**

- EPA's initial area of analysis was the single county Sheboygan MSA.
- Historically, the entire county has been designated nonattainment for ozone NAAQS.
- The boundary that is determined for the 2015 NAAQS is likely to inform EPA's separate action on revising the nonattainment boundary for the 2008 NAAQS.

Option 1: Finalize EPA's Proposed Area.

- **Review of Ambient Monitoring Data:** 2 monitors (1 violating, 1 attaining)
 - One monitor (AQS ID 551170006) is 200 feet from the Lake Michigan Shoreline, while a second monitor (AQS ID 551170009) is approximately 3.2 miles inland from the shoreline.

Table 1. Air Quality Data (all values in ppm).

County, State	AQS Site ID	2014 -2016 DV	Preliminary 2015-2017 DV
Sheboygan, WI	551170006	0.079	0.080
	551170009	0.069	0.070

- **Review of Emissions:** For location of large and small point source emissions see **Figure 22**.
 - EPA's intended boundary captures 95% of point source NO_x emissions, while area emissions for both NO_x and VOC are mainly concentrated in a portion of the county east of I-43, including the cities of Sheboygan, Sheboygan Falls, and the village of Kohler (see Error! Reference source not found.2).

Table 2. Total County-Level NO_x and VOC Emissions.

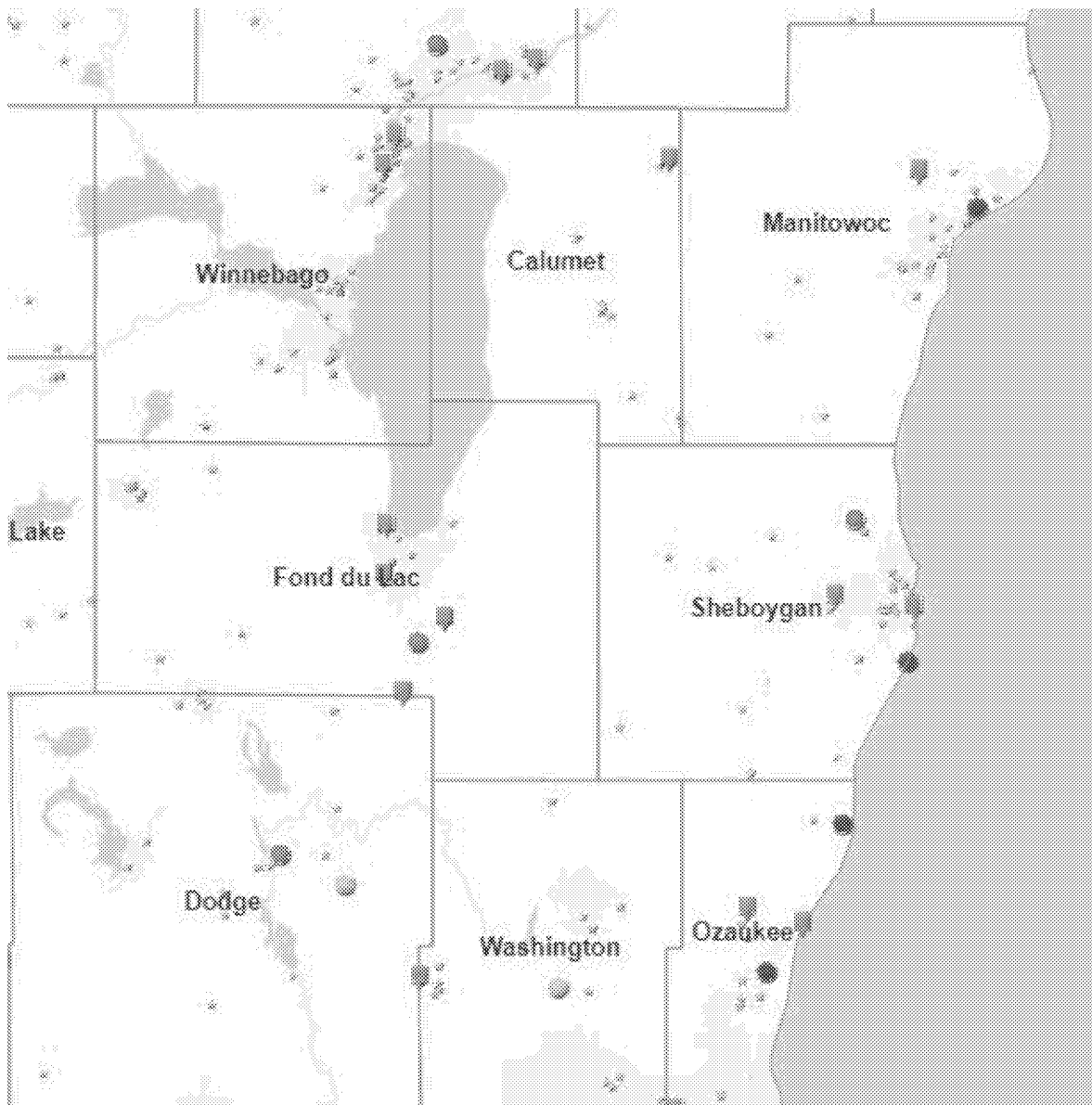
County, State	NO _x	VOC
Sheboygan, WI	4,585 tpy	3,421 tpy
% of Point Source Emissions East of EPA Intended Boundary	95%	41%

- **Review of Meteorology:** For HYSPLIT see **Figure 33**
 - WDNR completed a lake breeze inland penetration distance analysis using monitoring data, wind direction data at each monitor, and satellite data indicator analysis of lake breeze fronts.
 - WDNR results indicate that on most (but not all) afternoons where 1-hour concentrations exceed the standard, a lake breeze was present.
 - In Sheboygan only 10% of the days with 1-hour exceedances from 2014-2016 also had a shallow lake breeze (i.e. a lake breeze that did not impact the inland monitor).

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- EPA's intended partial county boundary at approximately 3.2 miles from the shore of Lake Michigan, is a measurable distance at which shallow lake breezes with the highest ozone concentrations do not seem to penetrate frequently enough to exceed the standard.
- EPA staff recommended clearly defined landmarks (roadways) to accommodate this distance.

Figure 2. Location of NO_x and VOC Point Sources in Wisconsin Shoreline counties. Large sources (orange dots) and small sources (yellow stars).



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Figure 3. HYSPLIT Trajectories for Sheboygan County Violating Monitor [Red=100 m, Blue=500 m, Green=1000 m]



Option 2: “Distance from Shoreline” boundary based on WDNR’s estimate area violating the NAAQS

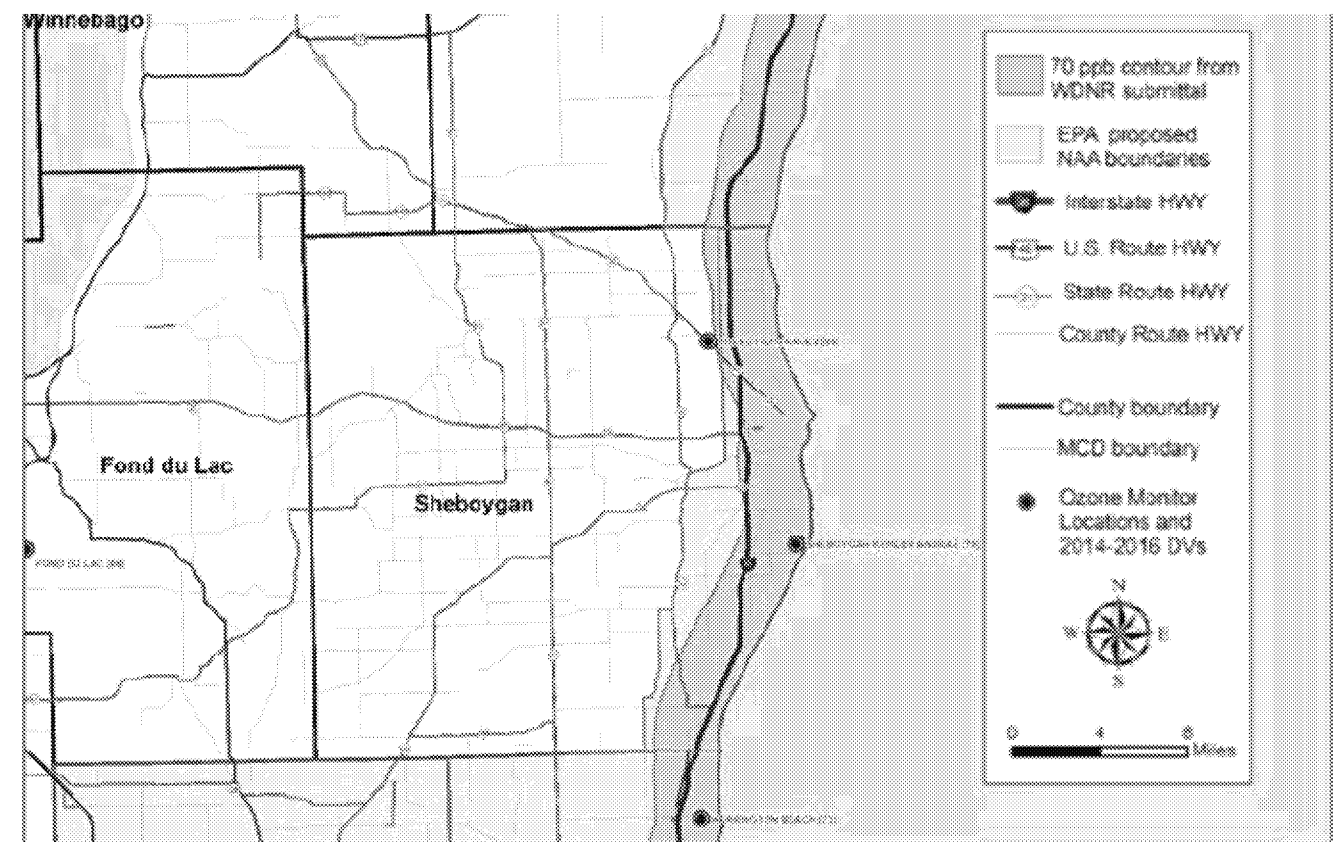
- 2.3 miles inland for Sheboygan (**Figure 4**)
- WDNR suggested using the Ordinary High-Water Mark (OHWM) as the boundary description but did not provide details on how this would be implemented in practice.

Considerations

- Using OHWM presents implementation challenges
 - OHWM changes about every 30 years and is commonly disputed in litigation by individual landowners.
 - Background on the OHWM
 - States can each set their own OHWM.
 - US Army Corps of Engineers uses federal OHWM as a jurisdictional boundary for administering its regulatory program in navigable waterways under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.
- Based on EPA’s assessment of lake breezes, this option possibly does not fully capture the exact geographic area where ozone is above 70 ppb.
- State and industry commenters would likely be satisfied with either Option 2 or 3.

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Figure 4. Proposed EPA Boundary (Green) and WDNR Recommendation (Pink) for Sheboygan County, Wisconsin.



Option 3: State's recommendation of Attainment for entire county

- This option has significant legal risk, since the area has a violating monitor.

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Manitowoc County (partial)

Background

- EPA's initial area of analysis was the single county Manitowoc mSA.
- Historically, the entire county has been designated nonattainment for ozone NAAQS.

Option 1: Finalize Proposed Area

- **Review of Ambient Monitoring Data:** Manitowoc has one violating monitor.

Table 3. Air Quality Data (all values in ppm).

County, State	AQS Site ID	2014 -2016 DV	Preliminary 2015-2017 DV
Manitowoc, WI	550710007	0.072	0.074

- **Review of Emissions.** For location of large and small point source emissions see **Figure 22 above**. Overall ozone precursor emissions (NO_x and VOC) from sources in Manitowoc County are mainly concentrated in the east central portion of the county particularly around the I-43 corridor and in and around the city of Manitowoc.

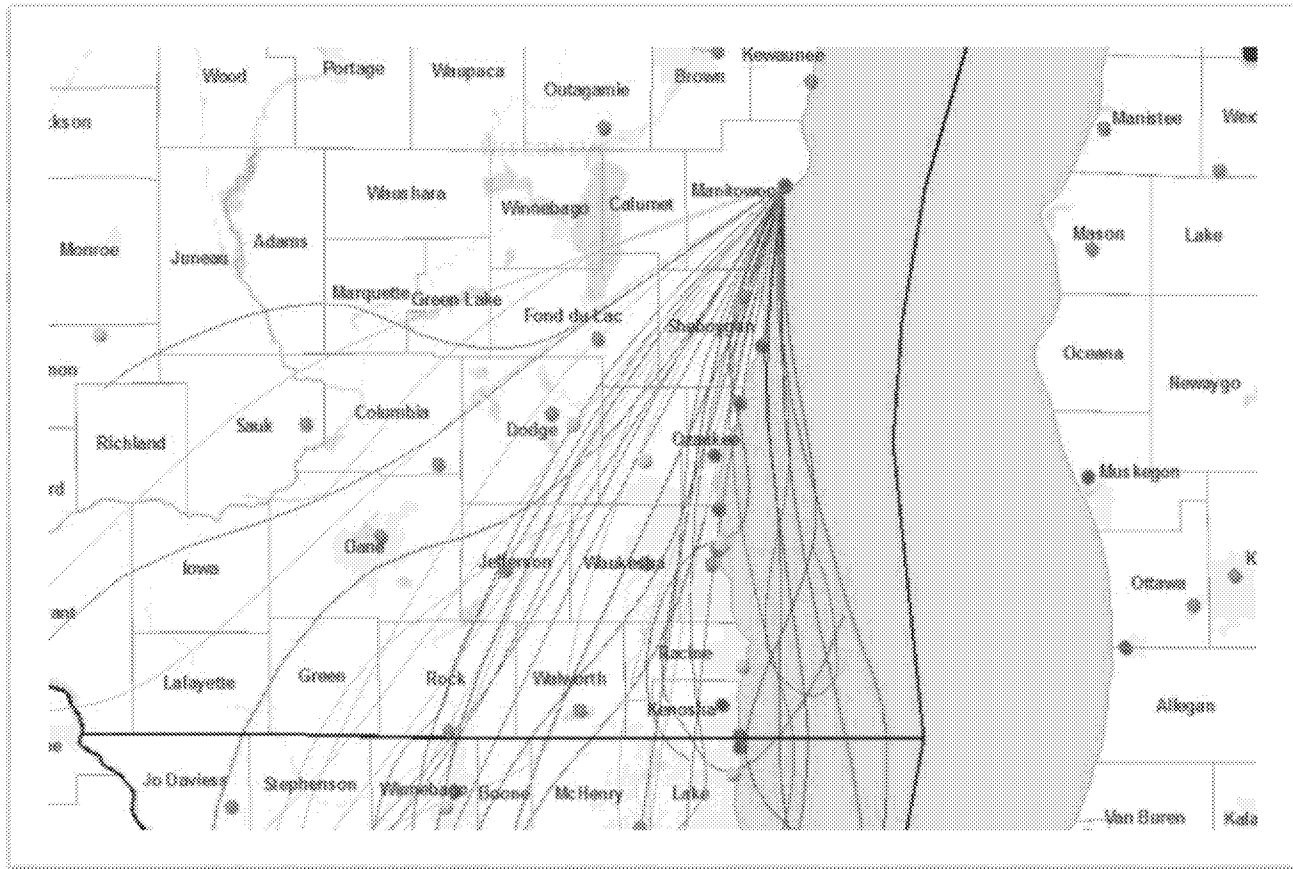
Table 4. Total County-Level NO_x and VOC Emissions.

County, State	NO _x	VOC
Manitowoc, WI	3,253 tpy	2,812 tpy
% of Point Source Emissions East of EPA Intended Boundary	86%	83%

- **Review of Meteorology:** For HYSPLIT see **Figure 5**
 - EPA technical staff ***found the Sheboygan partial county area determination based on WDNR's lake breeze inland penetration distance analysis—which was only possible due to the second monitor in Sheboygan— could be extended to Manitowoc County*** for the following reasons:
 - its proximity to Sheboygan County for which the inland penetration distance analysis was conducted (note there is no inland attaining monitor for Manitowoc County like there is for Sheboygan County, so WDNR would not have been able to do the same analysis for Manitowoc County)
 - Manitowoc's downwind location relative to large magnitude of precursor emissions sources in upwind urban areas of Milwaukee and Chicago
 - EPA staff concluded a roadway boundary maintaining a distance of at least 3.2 miles from Lake Michigan was appropriate. The inland attaining monitor in Sheboygan County is approximately 3.2 miles from Lake Michigan.

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Figure 5. HYSPLIT Trajectories for Manitowoc County Violating Monitor [Red=100 m, Blue=500 m, Green=1000 m]



Option 3: Accept WDNR's estimate of where the air is above 70 ppb

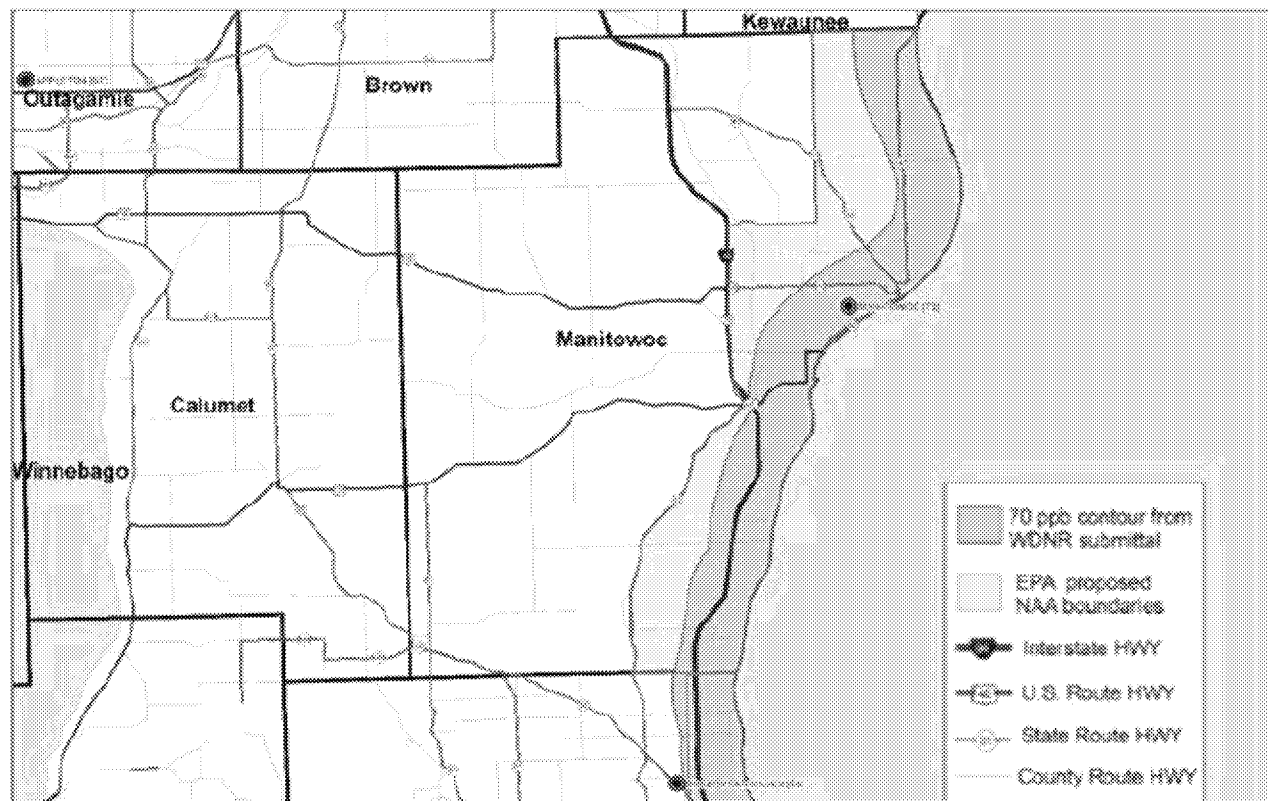
- 2.9 miles inland for Manitowoc (**Figure 66**).
- Based on distance from shoreline rather than roadways.
 - WDNR suggested using the Ordinary High-Water Mark (OHWM) but did not provide details on how this would be implemented in practice.

Considerations

- Same as listed above for Sheboygan.

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Figure 6. Proposed EPA Boundary (Green) and WDNR Recommendation (Pink) for Manitowoc County, Wisconsin.



Option 3: State's recommendation of Attainment for entire county

- This option has significant legal risk, since the area has a violating monitor.

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Door County (partial)**Background**

- EPA’s initial area of analysis was the single county.
- Historically, the entire county has been designated nonattainment for ozone NAAQS.
- Wisconsin has requested that the Administrator grant treatment of this area as a Rural Transport Area (RTA). RTAs are treated like Marginal nonattainment areas, but cannot be reclassified to Moderate if they fail to attain by the 2021 attainment date.
 - Areas can qualify as RTAs only if they are not part of or adjacent to a Metropolitan Statistical Area, and do not have significant emissions sources contributing to the violation.
 - Door County is adjacent to the Green Bay MSA, which includes the counties of Kewaunee, Brown, and Oconto.
 - EPA staff recommended a nonattainment boundary covering only the northern portion of Door County, north of the Sturgeon Bay Canal, so that the nonattainment area is not adjacent to the Green Bay MSA.

Option 1: Finalize Proposed Area

- **Review of Ambient Monitoring Data**

Table 5. Air Quality Data (all values in ppm).

County, State	AQS Site ID	2014 -2016 DV	Preliminary 2015-2017 DV
Door, WI	550290004 at Newport State Park	0.072	0.073

- **Review of Emissions:** 4 small point sources (see **Figure 7**).
 - 2 sources north of Sturgeon Bay Canal, and 2 sources just south of Sturgeon Bay Canal.
 - No large point sources.

Table 6. Total County-Level NO_x and VOC Emissions

County, State	Total NO _x (tpy)	Total VOC (tpy)
Door County, WI	3,066	2,439
% from Stationary Sources	~37%	~23%

- **Review of Meteorology**
 - The entire northern portion of county is likely to be experiencing ozone above 70 ppb (see HYSPLIT in **Figure 7**).

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Figure 7. HYSPLIT Trajectories for Door County Violating Monitor [Red=100m, Blue=500m, Green=1000m]. Small point sources (4 yellow stars).

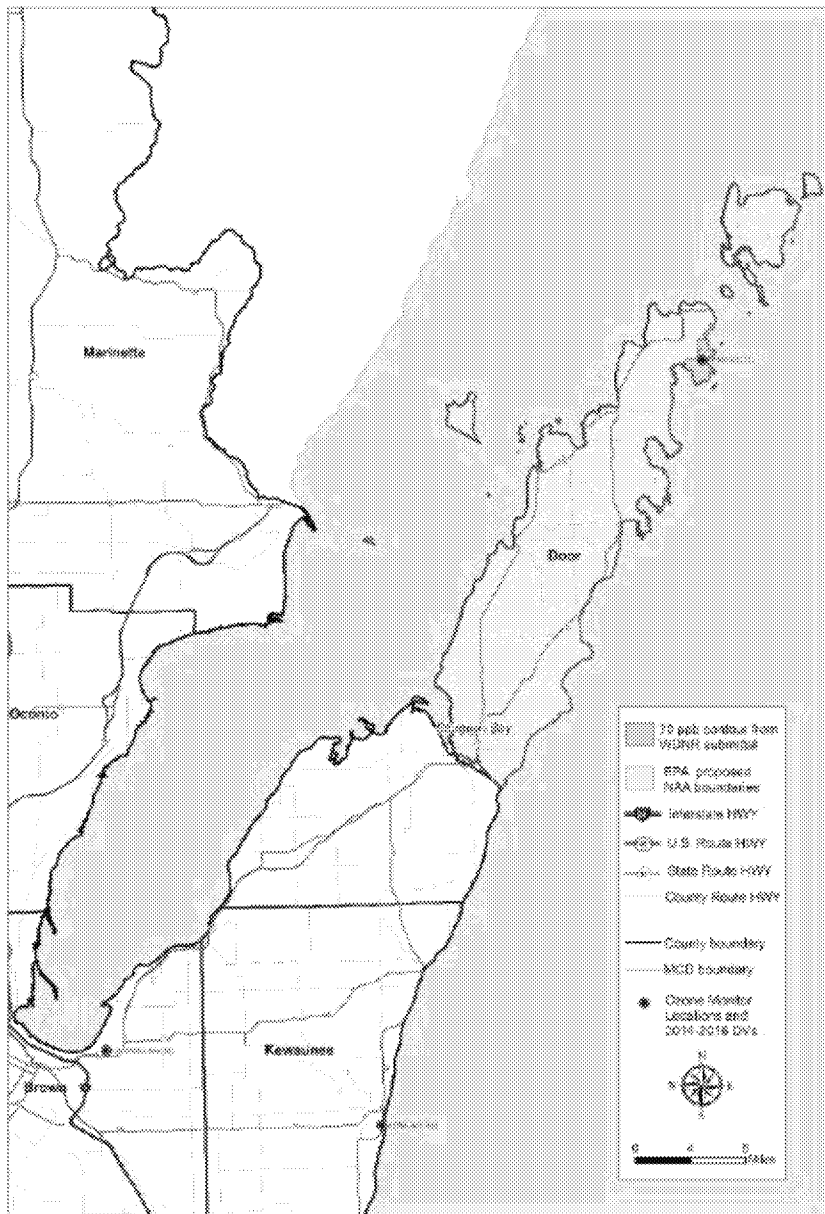


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Option 2: Newport State Park - WDNR's estimate of where the air is above 70 ppb (See Figure 88)

- Newport State Park boundary encompasses a 3.7 square mile area, significantly smaller than any other ozone nonattainment area.
- This boundary likely does not capture the majority of the county area that is experiencing ozone above 70 ppb.

Figure 8. *Proposed EPA Boundary (Green) and WDNR Recommendation (Pink) for Door County, Wisconsin.*

**Option 3: State's recommendation of Attainment for entire county**

- This option has significant legal risk, since the area has a violating monitor.